

REMARKS

Claims 13-19, 21-41 were previously pending in this application. Claims 19 and 21-41 are allowed. By this amendment, Applicants are amending claim 13. As a result claims 13-19 and 21-41 are pending for examination with claims 13, 19 and 31 being independent claims. No new matter has been added.

Applicants note that the Office Action Summary incorrectly indicates that claims 12-41 are presently pending although claims 12 and 20 were previously canceled.

Claim Amendment

Claim 13 is amended herein to clarify that the pixel signals processed by the pixel processor are “pixel signals produced by digitizing ... charge signals with an analog to digital converter.” As amended, claim 13 recites a “method for facilitating high signal throughput of an improved CMOS image sensor ... the method comprising ... producing pixel signals by digitizing said charge signals with an analog-to-digital converter ... processing said pixel signals in a pixel processor to produce a desired result.” (Emphasis added.) Support for the amendment can be found in the originally-filed application, for example, at page 18, lines 12-16, at page 24, lines 11-16, and in FIGS. 3A and 6A.

Rejections Under 35 U.S.C. §102

The Office Action rejects claims 13 and 14 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Publication No. US 2002/0101528 to Lee et al. (hereinafter “Lee”). Applicants respectfully submit that claims 13 and 14 are patentable in view of Lee because Lee fails to describe any method that “produc[es] pixel signals by digitizing ... charge signals with an analog-to-digital converter” and processes the “pixel signals in a pixel processor” as recited in claim 13, as amended.

Lee describes that an Analog to Digital Converter (“ADC”) circuit detects a signal that is readout of a pixel array by a Correlated Double Sampling circuit and that the signal is “converted into a digital word by the per-column ADC.” (Page 3, paragraph 39.) The Office Action implies that the ADC of Lee is a pixel processor because the “ADC circuit process[es] the signals in accordance with a result from the PGA.” (Office Action at page 3.)

As originally filed, claim 13 recited “conditioning said charge signals in said programmable gain amplifier in accordance with said double sampling circuit before said charge signals are digitized to produce pixel signals” As amended, claim 13 clarifies that the pixel signals are produced “by digitizing said charge signals with an analog-to-digital converter.” Further, claim 13 recites that the pixel signals produced with the analog-to-digital converter are processed “in a pixel processor.”

Applicants respectfully assert that Lee fails to describe any pixel processor let alone a “pixel processor” that produces “a desired result” by processing pixel signals produced “by digitizing ... charge signals with an analog-to-digital converter,” as recited in claim 13. In other words, although Lee discloses an analog-to-digital converter, Lee fails to disclose, teach, or suggest an analog-to-digital converter that produces pixel signals that are processed by a pixel processor.

Because Lee completely lacks a pixel processor and fails to describe, teach, or suggest acts of “producing pixel signals by digitizing said charge signals with an analog-to-digital converter” and “processing said pixel signals in a pixel processor to produce a desired result,” claim 13 is allowable in view of Lee. (Emphasis added.) In addition, claim 14 which depends from claim 13 is also allowable for the reasons described above. Accordingly, reconsideration and withdrawal of the rejection of claims 13 and 14 is respectfully requested.

Allowable Subject Matter


Applicants note with appreciation that claims 19 and 21-41 are allowed and that claims 15-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants have deferred re-writing claims 15-18 in independent form in view of the arguments provided herein regarding the patentability of independent claim 13 from which each depends either directly or indirectly. In view of the above amendments and remarks, the Applicants request withdrawal of the objection to claims 15-18.

CONCLUSION

In view of the foregoing amendments and remarks, reconsideration is respectfully requested. This application should now be in condition for allowance; a notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, please charge any deficiency to Deposit Account No. 50/2762.

Respectfully submitted,
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